

CALIFORNIA OCEAN
PROTECTION COUNCIL

Staff Recommendation
June 10, 2005

**SOUTHERN CALIFORNIA BIGHT MARINE LIFE ENHANCEMENT PROGRAM:
CHANNEL ISLANDS MARINE PROTECTED AREAS MONITORING PROGRAM-
ROV SURVEY PROJECT**

Developed By: Kara Kemmler

RECOMMENDED ACTION: Consideration of the Channel Islands Marine Protected Areas Monitoring Program Remotely Operated Vehicle (ROV) Survey Project, and possible: 1) determination that it is a high priority project, and 2) authorization for the Council's Secretary to take actions needed to provide for its implementation.

OCEAN or COASTAL LOCATION: Channel Islands National Marine Sanctuary Marine Protected Areas, off the Southern California Coast within the Southern California Bight, Santa Barbara and Ventura Counties. The sanctuary encompasses the waters that surround Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending from mean high tide to six nautical miles offshore around each of the five islands. The sanctuary's primary goal is the protection of the natural and cultural resources contained within its boundaries. The ROV Survey Project targets areas in and adjacent to the MPAs within the Sanctuary. (Exhibit 1).

AGENCY OR ENTITY RECOMMENDING PROJECT: State Coastal Conservancy
Department of Fish and Game, National Oceanic and Atmospheric Administration.

EXHIBITS

Exhibit 1: Project Location and Site Maps

Exhibit 2: Letters of Support

RESOLUTION:

"The Ocean Protection Council finds pursuant to Sections 35600 *et seq.* of the Public Resources Code that the Channel Islands Marine Protected Areas Monitoring Program Remotely Operated Vehicle (ROV) Survey Project, as herein described, is of high priority for ocean conservation and authorizes its Secretary to take actions necessary for its planning or implementation, including the allocation of up to \$765,000 of ocean protection funds reserved by the Coastal Conservancy for use in this project."

PROJECT DESCRIPTION:

The Nature Conservancy (TNC), Marine Applied Research and Exploration (MARE), California Department of Fish and Game (DFG) and the National Oceanic and Atmospheric Administration (NOAA) are engaged in a collaborative partnership to monitor habitat and species conditions within the Channel Islands Marine Protected Areas (MPAs) off Southern California's shores.

Staff recommends that the Ocean Protection Council find that the Channel Islands Marine Protected Areas Monitoring Program Remotely Operated Vehicle (ROV) Survey Project is of high priority and authorize the Secretary to the Council to take actions necessary to provide for its planning and implementation. A proposed \$765,000 grant from the Coastal Conservancy to The Nature Conservancy would provide funding for capital equipment to support the ROV survey project, which will provide vital nearshore marine monitoring in this critical coastal ocean area of the Southern California Bight. The coastal ocean of Southern California, and particularly the northern Channel Islands, supports a diverse array of consumptive and non-consumptive industrial, commercial uses as well as recreational and tourism activities.

This project is part of a larger program developed by regional staff of the Coastal Conservancy to create a program to address regional marine resource conservation needs. The Southern California Bight Marine Life Enhancement Program is intended to address the ecological health, as well as restoration, enhancement and stewardship of the Southern California Bight. The initial part of the program seeks to clarify goals for improving nearshore marine habitats and related coastal-draining watershed resources. This project will provide important information on the location and fecundity of areas adjacent to the Channel Islands Marine Sanctuary.

The Channel Islands MPAs Monitoring Program, dated February 2004, identifies shallow and deep subtidal habitat monitoring as high priorities and further identifies the ROV Survey Project as a key part of that monitoring program. The ROV scans the depths of the new Channel Islands MPAs, the largest system of reserves off the West Coast, to measure how fish populations are responding to the new sanctuaries. The ROV Survey Project team is coordinated by MARE, a non-profit organization formed in 2003 in part to help fund and support efforts to obtain baseline data in California's new MPA system. The team includes staff from the California Department of Fish and Game (DFG) and the Channel Islands National Marine Sanctuary (CINMS)/ National Oceanic and Atmospheric Administration (NOAA).

Shallow and deep subtidal monitoring (from 0 to ~100 feet/31m and >33m, respectively) are identified as the highest priorities in the Channel Islands MPAs Monitoring Program. The shallow subtidal region includes the primary areas for consumptive uses at the islands and provides information not only on MPAs but the entire nearshore ecosystem. The suite of monitoring efforts for the shallow subtidal area includes use of a remotely operated vehicle (ROV) as a quantitative survey tool for biologic and habitat surveys on an annual basis. For shallow subtidal monitoring, ROV surveys fill in the depth range from 20-33m where SCUBA diver observation times are severely limited. SCUBA surveys are excellent for relatively shallow habitat such as kelp beds, where fish are concentrated and can be easily counted. ROVs, in contrast, are able to cover the vast expanse of deeper habitat where fish aggregations are more patchy. Considerably less sampling has occurred in deeper subtidal areas than in shallow subtidal habitats.

The ROV is a non-extractive tool to archivally video the seafloor, and ground truth the habitat, species and biodiversity. Continuous video from 2 cameras allow baseline MPA video documentation to be gathered and archived for future analysis and comparisons. With measurement lasers, depth, altitude, camera range to bottom and temperature are digitally recorded along with exact ROV position in DGPS coordinates. The ROV surveys obtain information on type of habitat, abundance and sizes of all non-cryptic fishes, and abundance of focal invertebrate species within and outside MPAs. Exact location and precise area (in square meters) of bottom surveyed allow this data to be input and used in a GIS database, used increasingly as a resource management tool, and permits the ROV to return to the exact same sites year after year for monitoring purposes, to detect any population changes over time.

The ROV survey work is the most rapidly developing, high-tech portion of the MPAs monitoring process. Other important survey methods use submersibles, scuba divers, and other fishery-independent investigations, such as mark-and-recapture studies. All of these studies work in conjunction with one another, and are necessary to assess whether MPAs are effective. DFG biologists work closely with researchers at CSU Monterey Bay's Seafloor Mapping Lab, which produced multibeam sonar maps of the Channel Islands seafloor topography. The maps helped to identify key reef areas for exploration. Consulting the maps, survey paths (called "transects") are planned for each ROV survey.

The core group of sites consists of at least one site within and outside one MPA at each of the four northern Channel Islands. The core sites were chosen primarily because they extend into deeper water from the shallow water, historical data that continues to be collected by existing programs, and they have enough rocky reef to make quantitative assessment possible.

The ROV video is recorded digitally, using two cameras (forward and downward) along with GPS location, depth, temperature, date and time. This real-time marking of individual animals at known locations will be valuable for scientists studying aggregations and changing species distributions. Post-processing which consists of achieving and creating maps from the video, will allow the data to be further fine-tuned. Over time, monitoring fish and invertebrate populations in the MPAs may provide evidence of whether bottom-dwelling species such as rockfish, lingcod, and abalone respond to the no-fishing zones by repopulating areas both inside and outside of the MPAs. Going back every year and resurveying the same transects, seeing if numbers change, we will learn more about the MPAs and their viability as havens for valuable fish species. The videotape of the transects taken by the ROV serve as permanent records of the area, which can be reviewed multiple times to provide information on the habitat types, animals, and plants at the site.

Although, the team is currently able to conduct ROV project operations with existing equipment provided by DFG, additional equipment is necessary in order to continue to implement the scope of monitoring work for multiple years,. The ROV and associated equipment used in the ROV surveys conducted thus far has been provided by DFG, however, it is not dedicated for this purpose and will be needed for other activities throughout the year. In addition, the DFG system, while competent, is aging, and any system is subject to loss or damage in the unpredictable marine environment. Without a backup ROV system in place, a machine failure or loss could

result in the loss of an entire cruise, with enormous costs in time, opportunity, money and momentum. Consequently, a new, highly integrated and portable ROV system is proposed to serve as the primary survey unit going forward, with the DFG system remaining as a backup as needed. The new equipment will be compatible with the existing system. Should any major failures occur, this specification will allow the team to continue work until equipment is repaired or replaced. The useful life of an ROV is approximately eight to 10 years as a conservative estimate. For purposes of comparison, the California Department of Fish and Game ROV was purchased in 1994, has been well maintained, and is still going strong after 10 years and hundreds of dives.

This project will help carry out Conservancy goals relating to coastal and marine resource protection by providing the necessary data and coordination to help restore fish and wildlife habitat within coastal and marine waters, reduce threats to coastal and marine fish and wildlife, and diminish the impact of economic pressures on coastal and marine resources.

PROJECT FINANCING

Possible Funding Sources:

Coastal Conservancy	\$765,000
NOAA, DFG: In-kind Donations (July 2005-June 2006 commitment)	\$414,800
TBD	<u>\$1,819,690</u>

Total Project Cost (Capital + 3 Years Operation)	\$2,999,490
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On May 18, 2005, the State Coastal Conservancy reserved up to \$5,000,000 of its available funds to be expended in concert with the Council for programs and projects that the Council finds to be of high priority, and that are also consistent with the Coastal Conservancy's project criteria, priorities, and funding sources. Conservancy staff is recommending a grant of \$765,000 to The Nature Conservancy for consideration at the Conservancy's next public meeting on June 16. NOAA and DFG have also committed substantial in-kind support for the project.

CONSISTENCY WITH CALIFORNIA'S OCEAN ACTION STRATEGY: The proposed project is consistent with action item 13 in that it addresses restoration of threatened habitats, water quality and other impacts from development (see Action Strategy pg. 32).

CONSISTENCY WITH OCEAN PROTECTION COUNCIL'S INTERIM PROJECT SELECTION CRITERIA & GUIDELINES:

Mandatory Criteria

1. Furthers the following statutory purposes and policies of the Ocean Protection Act:

- **Improves management, conservation, and protection of coastal waters and ocean ecosystems:** An important part of the long term management of MPAs is establishing programs to monitor biological, social, and economic changes in areas that are within, nearby, and distant from the MPAs. Together, these monitoring programs will help

managers determine the impacts and effectiveness of the MPA network. CINMS, DFG and NOAA convened a Channel Islands MPA monitoring workshop where over 100 representatives from recreational and commercial fisheries, the scientific community, businesses, conservation groups, government agencies, and the general public developed preliminary biological and socioeconomic monitoring recommendations and monitoring of the shallow subtidal area was identified as the highest priority. The ROV Survey Project fills a niche where other methods fail to be as cost-effective or provide enhanced data.

- **Encourages those activities and uses that are consistent with sustainable, long-term protection and conservation of ocean and coastal resources:** The proposed project will provide for monitoring and mapping of marine habitats and marine wildlife in order to inform the management of the Channel Islands MPAs and facilitate protection and enhancement of coastal and ocean resources.
- **Promotes aesthetic, educational and recreational uses of the coast and ocean:** The Channel Islands National Marine Sanctuary was established as an area of national significance because of its exceptional natural beauty and resources. The Sanctuary is a very important nearshore coastal marine environment, home to important commercial and recreational fishery resources, as well as non-consumptive recreational and educational resources of regional and national importance, which the MPAs were created to protect and restore. Sport and commercial fishing provides an important social and economic benefit to the State of California, and contributes nearly \$6 billion to the State economy annually.
- **Improve monitoring, data gathering, and advances in scientific understanding of the ocean and coastal environment:** The ROV work is the most rapidly developing, high-tech portion of the MPAs monitoring process. The baseline, archival video and data collected during ROV surveys are analyzed for locational tracking accuracy, and post-processed into habitat characterization maps. The fish species of commercial/recreational significance are post-processed into species maps. Perhaps most importantly, these surveys began an archival record in areas where fishing was banned, for comparison with future studies.
- **Improves the health of fish and fosters sustainable fisheries in ocean and coastal waters:** More than 70% of U.S. commercial stocks are considered fully exploited, overfished or collapsed. In September 2003 the Pacific Fishery Management Council closed most of the West Coast groundfish fishery because four rockfish were declared overfished. As a result commercial and recreational fishing have been severely curtailed. Accurate fish stock assessment and habitat information are essential. The Pew Oceans Commission report, published in May 2003, recommended establishing a network of MPAs and recommended using advanced mapping and remote sensing technologies to expand the ability of policy makers and the public to compare alternative uses of these areas. (Pew Oceans Commission, America's Living Oceans: Charting a Course for Change, p. 31). Proper management and monitoring of the Channel Islands MPAs will ensure sustainable, long-term ocean resources that in turn will promote a sustainable commercial fishing industry in California.
- **Helps to integrate and coordinate the state's laws and institutions responsible for protecting and conserving ocean and coastal resources:** The main objective of this project will be to determine the effectiveness of the MPA off the coast of Southern

California, and if warranted, inform future selection of MPAs off the coast of California. This data will be of interest to multiple State agencies and the fishing industry and will require the involvement and cooperation of all the state and federal agencies responsible for ocean resource protection. The Nature Conservancy has already coordinated closely with the Department of Fish and Game, the Channel Islands National Marine Sanctuary, NOAA, scientists, non-profit organizations and other agencies concerned with management of the marine environment.

- **Helps to integrate and coordinate the state's laws and institutions responsible for protecting and conserving ocean and coastal resources:** As described, the ROV survey project is one component of the Channel Islands MPA Monitoring Program. Other important survey methods use submersibles, scuba divers, and other fishery-independent investigations, such as mark-and-recapture studies. All of these studies work in conjunction with one another, and are necessary to assess whether MPAs are effective.
2. **Consistent with the purposes of the funding source:** See Project Financing Section above.
 3. **Has demonstrable support from the public:** Implementation of the Channel Islands MPAs Monitoring Program and specifically, the ROV Survey Project enjoys widespread support from elected officials, public state and federal agencies, environmental organizations, universities, and the general public. Letters of support are included in Exhibit 2.
 4. **Relates directly to the ocean, coast, associated estuaries, and coastal-draining watersheds:** The proposed project is located in the subtidal area within the Channel Islands National Marine Sanctuary, which is an important coastal and ocean resource area of regional, statewide and national ecological and economical significance.
 5. **Has greater-than-local interest:** The Channel Islands National Marine Sanctuary was established as an area of national significance because of its exceptional natural beauty and resources. The Sanctuary is a very important nearshore coastal marine environment, home to important commercial and recreational fishery resources, as well as non-consumptive recreational and educational resources of regional and national importance, which the MPAs were created to protect and restore. Information developed with this ROV will have statewide importance in developing, monitoring and managing other MPAs.

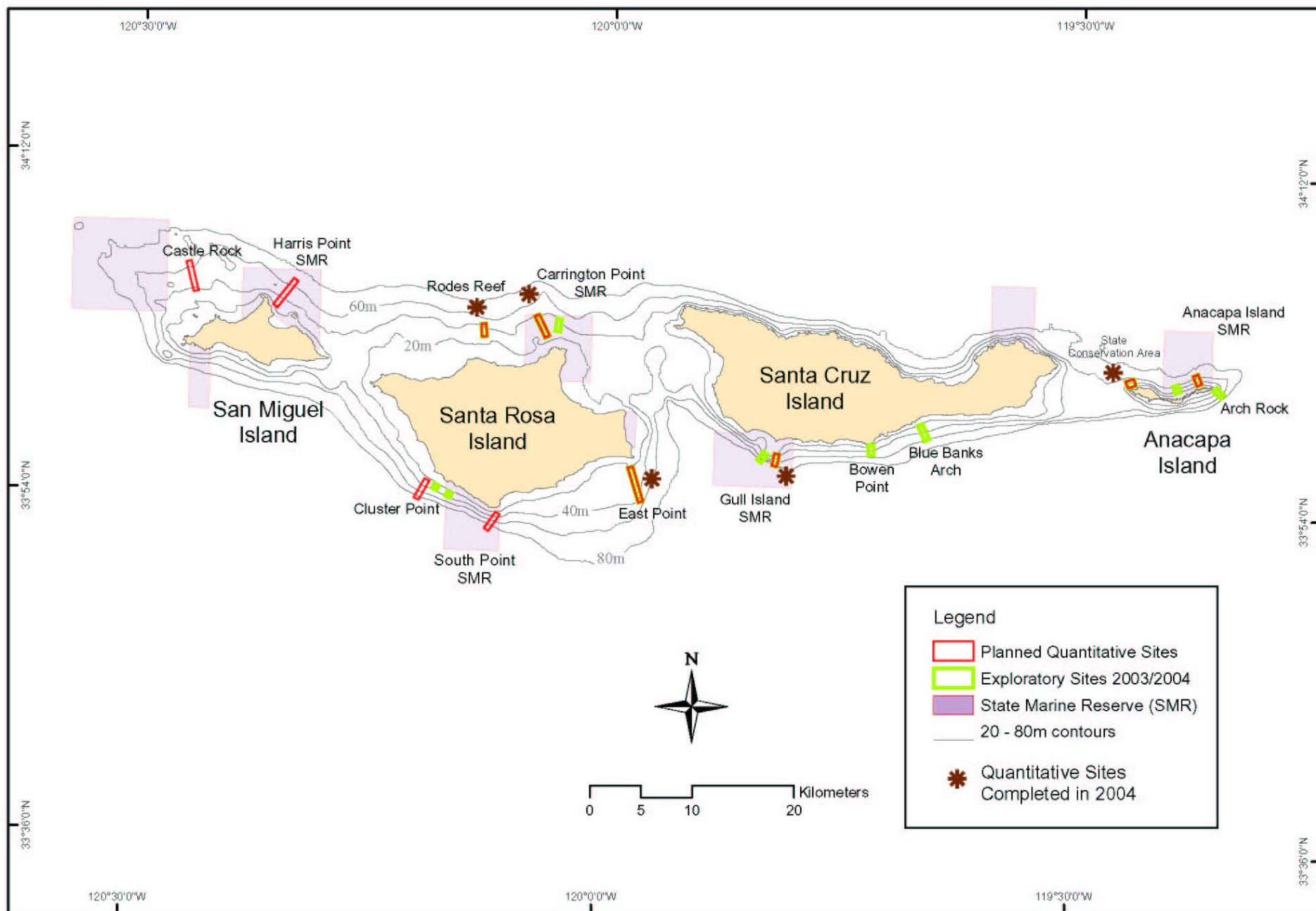
Additional Criteria

1. **Helps implement the California Ocean and Coastal Information, Research, and Outreach Strategy and other priorities of local, state or federal advisory groups, or scientific or policy reports, adopted by the council:** See Consistency with California's Ocean Action Strategy, above.
2. **The project has an element of urgency (there is an immediate threat to a coastal/ ocean resource from development or natural or economic conditions, a pressing need, or a fleeting opportunity):** Because fishing was restricted within MPAs in April 2003, time is of the essence in gathering baseline data and sustaining surveys in order to illustrate any changes over time, which is key to evaluating the effectiveness of the MPAs.
3. **The project helps resolve more than one issue:** The ROV Survey Project will serve to inform a variety of management issues, including resource needs, commercial fishing industry concerns, and recreational uses of ocean resources and selection of future MPAs.

4. **The project involves innovation (e.g. environmental or economic demonstration):** The ROV introduces an innovative approach with many advantages over traditional survey and sampling methodologies, such as, the non-extractive nature of the survey eliminates the risk of accidental take of protected species or damage to habitats; the ROV system works for extended periods beyond diver depths; digital, archival video imagery is produced, which is geospatially indexed, thereby reducing or eliminating several sources of error inherent in other approaches; and it is a highly cost-effective method. Additionally, the collaborative effort among NOAA, DFG, TNC, MARE and others to coordinate management and policy decisions based upon sound science is an innovative approach to resolving historic problems that have contributed to the degradation of ocean resources.
5. **The project is ready to implement (grantee or contractor will start and finish the project in a timely manner):** The ROV Survey Project team is formed and presently conducts surveys. The project team is ready to continue its efforts with additional equipment and funding.
6. **The project involves a combination of local, state, or federal agencies or is a public/private partnership:** The Channel Islands MPA Monitoring Program ROV Project is a cooperative venture involving university scientists, non-profit organizations, private groups, and state and federal agencies. MARE brought the various collaborators together for this project, raised funding and support, and supplied ROV technical advice and operational supervision. The Nature Conservancy is a major supporter of the project along with Commonwealth, KingFisher, CINMS/NOAA, DFG and National Resources Defense Council who have all supplied keystone funding.



Exhibit 1: Project location map and site map





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Channel Islands National Marine Sanctuary
113 Harbor Way, Suite 150
Santa Barbara, CA 93109

KARA KEMMLEE

June 8, 2005

California State Coastal Conservancy
Mr. Sam Schuchat
Executive Officer
Oakland, CA 94612-2530

Dear Mr. Schuchat:

I strongly encourage the Coastal Conservancy to fund the Channel Islands Marine Protected Area Monitoring Program ROV Survey Project. The current proposal involves a collaboration between NOAA National Marine Sanctuaries, the California Department of Fish and Game, two non-profit organizations (The Nature Conservancy and MARE), and potentially several universities and for-profit companies. Funding would allow the partners to perform baseline and annual monitoring to determine fish density and change over time in marine protected areas (MPAs). This project is a key component of the overall monitoring of Channel Islands MPAs.

The Channel Islands MPA network provides a unique opportunity to study the effectiveness of MPAs for ecosystem-based ocean and fishery management in California marine waters. The Channel Islands MPA network was established in 2003 by the state of California, within state waters of the Channel Islands, after being planned in a partnership between the Channel Islands National Marine Sanctuary and the state of California. MPAs have been recommended by the U.S. Ocean Commission as a potentially powerful ecosystem-based management tool. Further, the State of California's Marine Life Protection Act intends to establish a network of MPAs across California's marine waters.

Last year we provided our state-of-the-art research vessel SHEARWATER to support the remotely operated vehicle (ROV) survey cruises. The project team developed ROV survey methods that parallel those used by scuba divers at shallower depths, effectively extending the MPA monitoring into much deeper waters (20-100 meters). They have demonstrated their competence and dedication in 5 expeditions during the past 14 months, completing over 100 linear kilometers of transects. We found the project to be an excellent example of cooperation, synergy and leveraging. In addition, we support acoustic mapping, since high resolution acoustic maps allows ROV surveys to be targeted to the best monitoring sites.

Sincerely,

Chris Mobley

Chris Mobley
Manager

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JUN 13 2005

COASTAL CONSERVANCY
OAKLAND, CALIF.





DEPARTMENT OF FISH AND GAME

<http://www.dfg.ca.gov>

Marine Region
20 Lower Ragsdale Drive
Monterey, CA 93940
(831) 649-2893



June 7, 2005



Douglas Bosco, Chairman
California State Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612

Re: Support for Channel Islands Marine Protected Areas Monitoring Program:
ROV Survey Project

Dear Mr. Bosco:

On behalf of the California Department of Fish and Game (Department), I encourage your support for the Channel Islands Marine Protected Areas Monitoring Program: ROV Survey Project. This project is a collaborative partnership between The Nature Conservancy (TNC), Marine Applied Research and Exploration (MARE), the Department and the National Oceanic Atmospheric Administration's (NOAA) Channel Islands National Marine Sanctuary (Sanctuary).

The project brought funding, technical expertise and other partners together to extend ongoing monitoring around the Channel Islands marine protected areas (MPAs). Last year Department biologists worked closely with the ROV team to develop and implement ROV methodology to monitor fish and invertebrate populations. The team successfully completed 5 cruises, collecting more than 100 km of transect data that will be used to help evaluate the MPAs.

The new proposal will allow the partners to perform baseline and annual fish density monitoring. We expect the proposed work to produce quantitative data that can be used by managers to assess marine resources. We hope that you will be able to support this important project

Sincerely,

John Ugoretz
Nearshore Ecosystem Coordinator
California Department of Fish and Game

CHAIR, BUDGET SUBCOMMITTEE
ON RESOURCES (NO. 3)

COMMITTEE MEMBER:
BUDGET
EDUCATION
TRANSPORTATION
WATER, PARKS AND WILDLIFE

Assembly California Legislature

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ASSEMBLYMEMBER, FORTY-FIRST DISTRICT

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June 7, 2005

KARR KEMMLER

Douglas Bosco, Chair, and Commissioners
California Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612-2530

**Re: June 16, 2005 Meeting
Agenda Item #8 – SUPPORT**

Dear Chairman Bosco and Commissioners:

I am very pleased to support the authorization of up to \$765,000 to The Nature Conservancy for capital equipment for use with the remotely operated vehicle (ROV) survey project of the Channel Islands Marine Protected Areas Monitoring Program within the Channel Islands National Marine Sanctuary.

The Channel Islands National Marine Sanctuary is a national treasure located directly off the coast of my district. The more we know about the Sanctuary, the better stewardship we can provide and the more enjoyment it will bring to countless members of the public.

Thank you for what I hope will be your positive action on this funding authorization.

Sincerely,

Fran Pavley

FRAN PAVLEY,
Assemblymember, 41st District

FP:lr

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JUN 13 2005

COASTAL CONSERVANCY
OAKLAND, CA 94612

The Kingfisher Foundation

February 16, 2005

California State Coastal Conservancy
Sam Schuchat
Executive Officer
Oakland, CA 94612-2530

Dear Mr. Schuchat:

Kingfisher Foundation is supportive of expanding the available monitoring of deepwater habitat throughout the State. Last year we were a key funder of the Remotely Operated Vehicle (ROV) monitoring of the bell-weather Channel Islands Marine Protected Areas. The group coordinated by Marine Applied Research and Exploration (MARE) has developed methods for ROVs to parallel those used by scuba divers at shallower depths, effectively extending the monitoring into much deeper waters (20-100 meters). They have demonstrated their competence and dedication in 5 expeditions over the past 14 months.

During the past year, the project team produced far more in results than we expected. They brought to light the habitat and biota in covering over 100 linear km of transect. We found the projects to be excellent examples of cooperation, synergy and leveraging. Based upon the results to date the CINMS is encouraged that quantitative methods may be extended to future Channel Islands monitoring cruises and into other baseline and monitoring surveys throughout the state. In addition we encourage the support of acoustic mapping of the habitats to be evaluated- as this focuses the magnifying lens of the ROV, by concentrating its use in areas where quantitative change can be determined and documented.

The current proposal involves a collaboration between NOAA National Marine Sanctuaries, the California Department of Fish and Game, two non-profit organizations (The Nature Conservancy and MARE) and potentially several universities and for-profit companies. The capital equipment funding sought will allow the partners to perform baseline and annual monitoring to determine fish density and change over time. We expect the proposed work to produce quantitative data that can be used by managers as a tool to evaluate MPAs and other important sites.

Therefore we strongly encourage the Coastal Conservancy to fund the proposal entitled "MARE Proposed Capital Equipment Plan". Kingfisher is interested in continuing its support of this project.

Please support us in this pioneering work.

Yours truly,

Kristine Johnson
Executive Director

20 Walnut Street, San Francisco, California 94118
Phone: 415 409 8989 • Fax: 415 409 9090

cc Dirk Rosen